

CLIMATOLOGICAL DATA FOR JANUARY, 1911.

DISTRICT No. 4, LAKE REGION.

Prof. HENRY J. COX, District Editor.

GENERAL SUMMARY.

In Climatological District No. 4 the weather of January, 1911, as a whole, was characterized by few decided abnormalities, although in some sections there were marked departures from the average values, and the changes in the various conditions were at times quite rapid. The practically continuous cold of the previous November and December was broken during the first week, and comparatively mild weather prevailed during the greater portion of the period thereafter, except in the region of western Lake Superior, where the mean temperature was below the normal on 21 days. The distribution of temperature, as indicated by the mean monthly values, shows an almost exact reversal of the conditions of January, 1910, when there was a gradual increase in positive departures from the southern to the northern limits of the district. The departures of the present year, however, were not so pronounced as were those of a year ago.

The precipitation was, as a rule, frequent, but it was deficient in amount except in portions of the Upper Michigan Peninsula, and in the Ohio and Pennsylvania sections. The region of the Lower Lakes and Lake Huron experienced the greatest amount of cloudiness during the month, the regular Weather Bureau stations in these sections reporting each more than 20 cloudy days. The extreme western and extreme eastern sections were the freest from clouds, with an average of 10 or more clear days each. As might be expected, the days on which precipitation occurred were more frequent in the area of greatest cloudiness than in other portions of the district.

The following table summarizes the general conditions in the various portions of the district:

Portions of States lying within District No. 4.	Mean.									
	Temperature.	Departure from normal.	Precipitation.	Departure from normal.	Snowfall.	Number of days.			Prevailing wind direction.	
						0.01 inch or more precipitation.	Clear.	Partly cloudy.		
Minnesota.....	4.5	-4.6	0.76	-0.07	9.3	6	13	11	n. sw.	
Wisconsin.....	17.9	+.2	.96	-.67	10.4	6	10	6	15 s. w.	
Illinois.....	29.2	+5.5	1.17	-.83	2.2	10	3	7	21 s. w.	
Indiana.....	28.6	+2.6	1.88	-.63	3.4	9	8	5	18 sw.	
Upper Michigan.....	15.0	+.4	1.61	-.13	17.6	10	9	6	16 nw.	
Lower Michigan.....	24.2	+2.2	1.61	-.58	8.4	9	6	7	18 sw.	
Ohio.....	30.7	+4.4	2.97	+.53	5.8	11	8	5	18 sw.	
Pennsylvania.....	30.4	+3.9	4.05	+.02	11.5	17	3	8	20 s. w.	
New York.....	22.6	+2.6	2.33	-.47	12.1	14	8	6	17 sw.	
Vermont.....	19.1	+2.1	1.59	-.88	7.9	12	10	5	16 nw.	

TEMPERATURE.

Along the southern limits of the district the mean temperature of the month exceeded the normal by about 4°. To the northward the departures decreased, and the mean temperatures reached the normal values along the St. Lawrence River on the east and in the upper Michigan Peninsula on the west. Beyond these regions, and in the Canadian provinces, with the exception of the peninsula between Lakes Huron and Erie, the mean temperature for the month was below normal, and the deficiency increased rapidly toward the north and northwest.

The month was marked by sharply alternating warm and cold periods, accompanying the passage of storm areas across the district; but as the paths of the severest of these disturbances were well to the north, the warm periods were generally more pronounced and of longer duration than were the cold spells. A large percentage of the storms, however, passed south of western Lake Superior, so that northerly winds prevailed in that section, and the temperatures were as a consequence below normal almost continuously during the first three weeks of the month. As a result of this movement of storms, together with the extreme cold in the Canadian Northwest, a larger number of cold waves occurred in Minnesota than is usual during the month; namely, on January 2-3, 4-5, 8-9, 10-11, 20-21, 27-28, and 29-30. As these storms passed out down the valley of the St. Lawrence, the northerly sweep of the winds following also brought several well-marked cold waves to that section, the Weather Bureau office at Canton, N. Y., reporting such on January 3-4, 16, 20, and 31, as well as a number of sharp falls in temperature on other dates.

The month opened with the temperature above the normal, except in the region of western Lake Superior. The sections of the district lying in Vermont and New York experienced the warmest weather of the period generally on the 2d. The cold in the Northwest, however, spread rapidly eastward on the 3d and covered the entire district thereafter until the 6th, and during this interval the lowest temperatures of the month occurred in practically all sections, except New York, where a number of stations recorded their lowest readings during the cold spell of the 15th-18th. Following the 6th, warm weather prevailed generally until the 15th, with the culmination of the period on the 10th-11th, when the highest temperatures of the month occurred over Indiana and in scattered localities in Ohio, Michigan, Wisconsin, and Minnesota. As a rule, however, the period of greatest heat in the sections lying west of New York State extended from the 19th to the 29th, inclusive, an interval broken by cool weather on only one day—the 22d, when the mean daily temperature averaged somewhat less than 4° below the normal. From the 25th to the 29th the mean daily temperatures exceeded the averages for that portion of the month by from 15° to 20°, and it was during this time that the majority of the western stations recorded their highest readings. On the 30th and 31st cool weather overspread the district, and the month closed with the temperature from 8° to 16° below the normal over the extreme eastern sections.

As shown by the reports of the regular Weather Bureau stations, the mean daily range in temperature exceeded 20° in those portions of the district which experienced the least cloudiness—the region of western Lake Superior and the Champlain Valley. In lower Michigan the mean daily range was least, averaging 13.5°, and along the western shore of the peninsula, under the influence of the waters of Lake Michigan, the average maximum and minimum readings showed a difference of but 12°. The extreme range throughout the district was from -42° at Floodwood and Stephens Mine, Minn., on the 3d, to 60° at Hudson, Ohio, on the 29th.

PRECIPITATION.

Precipitation in excess of the normal occurred in that portion of upper Michigan lying between Marquette and Whitefish Point, and in the forest and hill sections adjacent. However, the average for the peninsula as a whole was slightly deficient. In the region lying to the southward of Lake Erie, also, the total amount of precipitation was greater than the normal for the month. In the other portions of the district, except for a few scattered localities, the monthly amounts were less than the average, the deficiency reaching 1 inch or more in parts of lower Michigan and New York State.

There were no distinctly marked periods of precipitation, but by far the greater portion of the monthly fall occurred during the 1st-14th and 26th-31st. Indeed, during the interval between these two periods, while rain or snow fell at many stations on each of the 11 days, the amounts were for the most part inappreciable, and but two Weather Bureau stations reported falls exceeding 0.10 inch. Throughout the entire month there was no day on which rain or snow did not occur at a number of stations in the district.

Snow.—The precipitation fell chiefly in the form of snow over the northwestern portions of the district, and was about evenly divided between rain and snow over northern Indiana, southern lower Michigan, and the eastern sections, while in northern Ohio only about one-fifth of the total precipitation occurred in the form of snow.

At the beginning of the month snow covered the lake region, except the portions lying in Indiana and Ohio, where it melted soon after each fall, the depths increasing gradually northward to more than 40 inches on the southern shore of Lake Superior, and to about 18 inches in northern New York. Owing to the comparatively frequent falls during the first half of the month, and in spite of the warm period of the 8th-14th, the extent and depth of the covering did not change materially throughout this time, but by the 24th there was a considerable decrease in depth over the northern and eastern portions of the region, due to high temperatures and almost total absence of appreciable snowfall after the 15th. During the following week the continued warm weather caused a still further lessening of the depths, and at the end of the month the ground was bare generally over southern Wisconsin, the southern counties of lower Michigan, and the Indiana and Ohio portions of the district, while the covering on the Superior shore had decreased to from 20 to 24 inches.

The total snowfall for the month was considerably less than the average for January, except in the east-central portions of the upper Michigan Peninsula. In this section there was much snow during the first half of the month, and the almost constant falls, together with the depth of 3 feet or more which lay on the ground in the forest region, rendered logging practically impossible because of the difficulty in keeping the roads open and iced sufficiently for sledding. Some of the lumbermen in the northern woods of that section are reported to have abandoned their camps for the present season, while in the vicinity of Escanaba, in several instances hauling was suspended from the 10th until the settling of the snow during the warm weather of the last decade.

ICE.

As a rule the ice on the Great Lakes increased slowly in thickness during the first portion of the month, and the formation continued during the remainder of the

period over the northern portions of the upper lakes. The warm weather of the latter half, however, together with the warm rains, more or less broke up the ice in the harbors of the lower lakes, and there was a general decrease on Lake Huron as well. Field ice was reported at the lower ends of Lakes Huron and Erie during the greater portion of the month, and large fields driven by the winds were noted in all the lakes.

The thickness of ice in inches at the close of the month, as reported at selected stations, was as follows:

Duluth.....	25	Alpena.....	0
Houghton.....	13	Port Huron.....	10
Sault Ste. Marie.....	15	Cleveland.....	0
Escanaba.....	16	Buffalo.....	9
Green Bay.....	9	Rochester.....	0

On Lake Champlain there was an alternation of freezing and opening during the month. The ice in "Broad Lake" did not become sufficiently thick to withstand the high winds until the close of the period, when it had practically closed over. At Burlington, Vt., a thickness of 7 inches was measured on the 30th. In New York State at the close of the month, ice was being cut on Cazenovia and Oneida Lakes, 9 and 14 inches in thickness, respectively. In lower Michigan an abundant supply of ice, from 8 to 12 inches thick, was harvested from the inland lakes.

MISCELLANEOUS.

Flood conditions.—General rains in Ohio on the 13th-14th, and near the close of the month, caused moderately high water in the Maumee and Sandusky Rivers, and some flooding by the smaller streams. An extensive ice gorge prevailed in the lower Sandusky River from the 8th until after the middle of the month. It was feared that damage by flooding would occur at Fremont on the 14th, but fortunately the volume of water was not great enough to cause a serious damming back by the ice gorge.

Freshet conditions were also reported in the Genesee River on the 4th, accompanied by the passing out of the ice, but while the water continued high throughout the remainder of the month, no new river ice was formed, and no damage appears to have resulted.

Fog.—Accompanying the passage of a barometric depression across the district on the 26th-28th, dense fog was general in practically all sections. Delays to transportation resulted, and a railway wreck near Nunica, Mich., is attributed to the foggy conditions.

Storms.—During the night of the 4th-5th, high westerly winds with heavy snow prevailed over the northern portions of the lower peninsula of Michigan, greatly delaying railroad traffic in those sections.

Accompanying the passage of the storm of the 8th-9th, the center of which entered the lake region near Milwaukee and passed eastward across lower Michigan, the highest wind velocities of the month were general over the southern sections of the district, reaching 60 miles an hour or more, from the southwest or west, at Chicago, Toledo, Detroit, Cleveland, and Buffalo. At Grand Haven, Mich., where the storm was characterized as the worst of recent years, the on-shore wind attained a velocity of 56 miles an hour. The damage reported as a result of these high winds, however, while of considerable extent in localities, was not exceptionally great.

On the 29th-30th a barometric depression of more than ordinary magnitude passed eastward along the northern borders of the lake region, accompanied by the highest velocities of the month in those sections, and it was followed by the drop in temperature which marked the last two days of the period.

TABLE 1.—Climatological data for January, 1911. District No. 4, Lake Region.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.				Precipitation, in inches.				Sky.			Observers.					
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total rainfall, unmeasured.	Number of rainy days, 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.	Prevailing wind direction.	
<i>Minnesota.</i>																				
Duluth.....	St. Louis.....	1,133	40	4.9	- 5.5	35	24	-30	3	44	1.12	+ 0.14	0.72	10.5	10	8	13	10	sw.	U. S. Weather Bureau.
Floodwood.....	do.....	1,257	6	5.2	-	44	24	-42	3	63	0.59	-	0.30	11.5	3	23 ^b	0 ^b	6 ^b	n.	M. H. Schussler.
Stephens Mine.....	do.....	1,500	4	1.5	-	35	10†	-42	3	50	0.75	-	0.30	7.5	5	13	12	6	w.	Oliver Iron Mining Co.
Two Harbors.....	Lake.....	614	17	9.6	- 3.5	41	10	-31	3	40	0.52	- 0.19	0.30	9.0	5	11	17	3	nw.	G. W. Watts.
Virginia.....	St. Louis.....	1,434	17	1.4	- 4.9	39	31	-39	3	47	0.82	- 0.16	0.23	8.2	7	11	10	10	n.	Oliver Iron Mining Co.
<i>Wisconsin.</i>																				
Appleton.....	Outagamie.....	795	10	17.4	+ 1.4	37	10†	-20	4	33	0.47	- 1.45	0.34	4.2	9	9	4	18	s.	Wm. O. Thiede.
Ashland.....	Ashland.....	647	20	12.5	- 2.3	41	24	-19	6	49	1.00	- 0.14	0.55	13.5	5	10	11	11	sw.	Sam Wheeler.
Bayfield.....	Bayfield.....	635	2	18.2	-	40	27	-11	4†	32	2.70	-	1.20	27.0	4	15	0	16	nw.	Wm. Miller.
Cecil.....	Shawano.....	804	4	19.4	-	40	24	-25	4	39	0.75	-	0.35	13.0	5	9	14	8	sw.	Louis W. Schmidt.
Fond du Lac.....	Fond du Lac.....	1,293	20	13.1	- 0.3	41	24	-28	6	41	0.90	- 0.18	0.80	9.0	2	9	1	21	nw.	Fred S. Evans.
Grand River Locks.....	Marquette.....	770	15	16.6	-	44	29	-32	4	48	0.39	- 0.71	0.10	6.0	7	11	6	14	nw.	Geo. W. Marshall.
Green Bay.....	Brown.....	617	25	16.5	+ 1.9	38	10	-18	4	31	0.87	- 0.82	0.63	8.3	10	6	7	18	s.	Jerry Parkinson.
Iron River.....	Bayfield.....	1,096	2	19.6	-	38	24	-15	5	32	0.88	-	0.45	8.0	7	12	2	17	nw.	U. S. Weather Bureau.
Kewaunee.....	Kewaunee.....	590	2	19.6	-	38	24	-15	5	32	0.88	-	0.31	3.2	8	6	8	7	sw.	Harry C. Hall.
Manitowoc.....	Manitowoc.....	616	60	20.9	+ 1.8	40	24†	-11	4†	36	0.70	- 1.00	0.24	9.0	8	15	4	12	sw.	Eugene V. Kimball.
Menasha.....	Winnebago.....	764	14	21.6	-	42	25	-9	4	39	1.06	-	0.22	6.5	8	12	5	14	sw.	Johanna Lips.
Menominee Falls.....	Waukesha.....	842	2	21.6	-	42	25	-9	4	39	1.06	-	0.62	10.2	11	7	6	18	sw.	Geo. T. Allanson.
Milwaukee.....	Milwaukee.....	681	40	23.8	+ 4.0	45	26	-5	5	35	1.24	- 0.77	0.27	4.5	3	8	5	13	nw.	Arthur H. Christman.
New London.....	Outagamie.....	762	15	15.9	- 0.7	39	24	-21	4	41	0.75	- 0.41	0.38	12.0	3	8	5	13	nw.	U. S. Weather Bureau.
Oconto.....	Oconto.....	590	20	17.3	- 0.4	38	24†	-23	4	38	1.40	- 0.24	0.30	14.0	3	7	13	11	s.	August H. Pape.
Oshkosh.....	Winnebago.....	744	22	16.9	- 1.4	38	26†	-20	4	38	0.50	- 0.91	0.30	8.0	2	14	8	9	w.	Wm. K. Smith.
Pine River.....	Waushara.....	900	16	15.8	- 0.9	41	24	-21	4	36	0.62	- 0.38	0.29	6.8	5	9	13	13	sw.	Evan Vincent.
Plum Island.....	Door.....	588	3	21.8 ^d	-	44	30	-8	4	41	2.37	-	0.60	17.0	8	9	8	14	nw.	Geo. H. Carpenter.
Plymouth.....	Sheboygan.....	843	1	19.9	-	40	24†	-15	4	33	0.58	-	0.27	4.5	8	7	5	19	nw.	Geo. C. Robinson.
Port Washington.....	Ozaukee.....	713	18	21.8	+ 1.6	41	27†	-9	4	40	1.50	- 0.42	0.70	13.0	10	6	6	19	nw.	Paul O. Feldrappe.
Racine.....	Racine.....	633	14	24.4	+ 0.7	45	24†	-6	5	30	0.61	- 1.15	0.12	7.2	3	13	1	17	sw.	Richard C. Kann.
Ripon.....	Fond du Lac.....	935	1	17.7	-	42	31	-19	4	38	0.72	-	0.37	7.2	3	13	4	14	nw.	Daniel Davis.
Sheboygan.....	Sheboygan.....	831	12	21.6	+ 0.3	41	27	-10	4†	35	0.67	- 1.28	0.52	9.0	2	7	4	20	nw.	Ripon College.
Sturgeon Bay.....	Door.....	600	12	18.2	- 2.5	39	11	-14	5	36	1.03	-	0.37	16.0	7	14	5	12	nw.	Louis C. Meyer.
Superior.....	Douglas.....	671	2	6.8	-	38	10	-26	3	49	0.55	-	0.35	5.5	8	9	11	11	nw.	Adam N. Dier.
Waupaca.....	Waupaca.....	857	16	15.4	- 0.8	41	24	-32	4	44	0.73	- 0.28	0.32	14.2	7	9	3	19	nw.	Edward B. Banks.
<i>Illinois.</i>																				
Chicago.....	Cook.....	824	41	29.2	+ 5.5	54	26	0	5	34	1.17	- 0.83	0.55	2.2	10	3	7	21	s.	U. S. Weather Bureau.
<i>Indiana.</i>																				
Auburn.....	Dekalb.....	874	15	25.8	+ 0.5	49	11†	-1	5†	29	2.17	- 0.11	0.99	-	8	5 ^a	0 ^a	25 ^a	sw.	Mrs. Josie B. Kuhiman.
Berne.....	Adams.....	849	2	31.0	-	57	12	0	5	34	3.35	-	0.95	4.0	13	7	7	17	sw.	Henry M. Reusser.
Elkhart.....	Elkhart.....	801	9	29.8	-	54	27	2	5	28	1.50	-	0.61	-	7	7	14	10	sw.	Dr. Miles Medical Co.
Fort Wayne.....	Allen.....	775	15	31.1	+ 4.2	55	11	1	5	30	1.89	- 0.18	0.90	2.2	11	6	6	19	sw.	Orion E. Mohler.
Hammond.....	Lake.....	598	20	26.9	+ 3.2	50	11†	0	4	40	1.23	- 1.01	0.25	4.5	8	7	7	17	sw.	Carson W. Whitney.
Howe.....	Lagrange.....	886	6	28.4	-	52	26†	2	5	26	1.85	-	0.70	6.0	4	16	0	15	w.	James E. Zook.
South Bend.....	St. Joseph.....	726	18	27.6	+ 2.4	52	11†	0	6	31	1.81	- 0.92	0.80	2.5	12	6	1	24	s.	Henry H. Swalm.
Whiting.....	Lake.....	606	2	28.2	-	53	27	-1	5	33	1.23	-	0.66	1.5	9	10	5	16	sw.	D. H. Boyd.
<i>Michigan—Upper Peninsula.</i>																				
Baraga.....	Baraga.....	623	9	19.0	-	48	25	3	15†	37	0.84	-	0.20	9.0	8	13	0	18	n.	D., S. & A. Ry.
Bergland.....	Ontonagon.....	1,300	1	12.2	-	40 ^a	16	-23	4	37	0.84	-	0.20	9.0	8	6	6	19	sw.	Frank McMonigal.
Blaney.....	Schooletcraft.....	4	17.4	-	41	24	-19	6	35	0.35	-	0.50	29.5	16	6	4	21	w.	Dr. S. S. Hackwell.	
Calumet.....	Houghton.....	1,246	23	12.9	- 2.5	35	26	-11	4	30	2.36	- 0.22	0.50	23.5	18	4	7	20	nw.	E. S. Grierson.
Chatham.....	Alger.....	875	10	14.2	- 1.7	42	24	-28	4	43	2.31	+ 0.05	0.57	23.1	18	4	7	20	nw.	U. P. Experiment Station.
Deer Park.....	Luce.....	610	10	13.8	- 4.4	38	10	-10	4	27	0.80	- 1.46	0.50	8.5	3	12	0	19	s.	Mrs. Sara E. McGaw.
Detour.....	Chippewa.....	585	10	28.4	-	40	26†	-19	4	39	0.91	- 0.97	0.40	10.0	5	14	5	17	nw.	G. C. Reed.
Eagle Harbor.....	Keweenaw.....	622	12	17.9	- 2.0	41	26	-5	4	34	1.09	- 0.13	0.40	16.9	12	5	6	20	nw.	John Nolen.
Escanaba.....	Delta.....	612	38	16.3	+ 1.8	42	24	-12	5	30	1.05	- 0.50	0.47	12.5	8	9	8	14	nw.	U. S. Weather Bureau.
Ewen.....	Ontonagon.....	1,147	10	10.8	- 2.2	42	24	-18	6	39	1.45	+ 1.35	0.60	24.5	14	11	7	13	sw.	W. B. Hatfield.
Houghton.....	Alger.....	668	10	14.7	+ 0.8	38	26	-14	4	33	1.40	- 0.64	0.37	22.7	15	8	8	15	nw.	Mrs. Lena Truedell.
Humboldt.....	Marquette.....	1,536	14	13.7	+ 3.0	39	23	-38 ^a	6	51 ^a	1.89	- 0.57	1.20	18.0	2	7	3	21	sw.	U. S. Weather Bureau.
Iron Mountain.....	Dickinson.....	1,111	10	15.6	+ 0.3	47	24	-28	6	40	0.72	- 0.04	0.63	3.6	3	2	8	21	nw.	Chapin Mining Co.
Iron River.....	Iron.....	1,504	14	10.6	- 0.2	45	25	-32	6	36	1.70	+ 0.51	0.50	12.0	6	20	10	1	nw.	Victor D. Laing.
Ironwood.....	Gogebic.....	1,520	8	11.2	-	40	24	-23	3	38	1.90	-	0.70	19.0	15	3	12	16	w.	Prof. J. V. Brennan.
Ishpeming.....	Marquette.....	1,536	11	14.2	+ 1.4	42	24	-22	6	39	1.52	- 0.36	0.55	15.1	8	7	12	12	sw.	J. A. Malone.
Isle Royale.....	Keweenaw.....	610	4	19.5	+ 0.8	43	10	-6	3	27	0.88	- 1.21	0.27	8.3	11	4	6	21	w.	M. I. S. P. Com.
Mackinac Island.....	Mackinac.....	510	5	13.8	-	46	24	-23	4	36	1.15	-	0.40	11.0	5	12	5	14	nw.	Herman Johnson.
Maple Ridge.....	Marquette.....	7																		

TABLE 1.—Climatological data for January, 1911. District No. 4—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Sky.	Prevailing wind direction.	Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unadjusted.	Number of rainy days, 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.		
<i>Michigan—Lower Peninsula—Continued.</i>																				
Coldwater	Branch	984	14	28.2	+ 3.0	47	11	- 1	5	30	1.40	- 0.85	0.40	3.0	9	7	5	19	sw.	L. S. & M. S. Ry.
Concord	Jackson	6	26.6	50	27	0	4†	30	1.83	0.80	4	11	14	6	Dr. W. N. Armstrong.	Dr. W. N. Armstrong.				
Croton	Newaygo	685	3	25.0	47	10	- 4	18	33	1.94	0.50	9.0	10	3	15	13	sw.	G. R. Mus. Power Co.		
Detroit	Tsiawassee	730	40	27.4	+ 3.1	51	27	2	5	27	2.04	+ 0.06	0.72	5.8	14	3	10	18	sw.	U. S. Weather Bureau.
Durand	Iosco	799	4	24.4	+ 3.0	45	24	- 8	4	30	1.87	+ 0.17	0.60	13.0	8	17	5	9	sw.	H. J. Tobin.
East Tawas	Eloise	590	14	24.4	+ 3.0	45	24	- 8	4	30	1.87	+ 0.17	0.60	13.0	8	17	5	9	sw.	Detroit & Mackinac Ry.
Flint	Wayne	640	14	28.2	+ 4.0	47	28	2	4†	29	1.76	+ 0.33	0.65	4.5	13	10	6	15	w.	John Gilmore.
Frankfort	Genesee	730	22	25.3	+ 3.4	46	27	1	4†	27	1.05	+ 0.71	0.35	3.0	8	6	8	17	w.	William L. Fisher.
Ganges	Benzie	559	7	23.4	40	11	0	6	33	2.40	0.80	24.0	9	6	0	25	5	sw.	Capt. Geo. Morency.	
Gaylor	Allegan	665	2	26.8	+ 4.6	49	26	- 1	4	26	1.23	0.35	8.0	11	3	6	22	sw.	H. H. Hutchins.	
Gladwin	Otsego	1,367	6	20.8	40	25†	- 7	3	28	1.35	0.01	4.5	4	20	3	0	21	sw.	Michigan Central R. R.	
Grand Haven	Gladwin	794	15	22.2	+ 2.0	50	25	- 7	4	39	0.45	- 1.53	0.15	3.5	4	20	3	8	sw.	Geo. R. Smith.
Grand Rapids	Ottawa	628	30	26.6	+ 2.1	44	26	6	4	24	2.22	- 0.58	0.37	19.9	18	5	5	21	s.	U. S. Weather Bureau.
Grape	Kent	707	22	26.9	+ 3.1	48	27	4	5	25	1.57	- 1.21	0.28	7.8	13	5	11	15	s.	Do.
Grass Lake	Monroe	625	21	28.2	+ 3.0	49	11	3	5	28	1.33	- 0.31	0.49	2.5	9	6	11	14	w.	Joseph W. Morris.
Grayling	Jackson	989	5	24.8	+ 4.7	47	27	- 3	4	31	1.24	0.45	2.0	7	11	2	18	sw.	Menzo Conklin.	
Harbor Beach	Crawford	1,147	21	17.1	- 0.2	38	10	- 18	3	41	1.70	- 0.44	0.50	14.0	11	6	21	4	nw.	Dr. S. N. Insley.
Harrison	Huron	635	23	22.1	+ 4.6	42	2	- 8	10	46	1.70	+ 0.07	0.51	11.0	8	6	6	21	sw.	Pere Marquette R. R.
Harrisville	Clare	1,159	18	22.8	+ 3.6	40	11	- 9	22	37*	0.12	- 1.79	0.30	6.9	13	10	5	16	sw.	Do.
Hart	Alcona	616	27	22.2	+ 2.5	40	8	- 6	3	30	1.12	- 1.79	0.30	6.9	13	10	5	16	sw.	Dr. D. W. Mitchell.
Hayes	Oceana	698	19	26.2	+ 3.9	40	26†	- 2	6	25	2.40	- 0.77	0.90	15.0	7	3	11	17	w.	Pere Marquette R. R.
Highland	Oakland	620	21	24.0	+ 1.9	44	27	0	4	33	1.04	- 0.97	0.20	9.0	8	7	5	19	sw.	C. F. Leippardt.
Hillsdale	Hillsdale	830	19	26.0	+ 1.9	49	27	- 1	5	28	0.76	- 1.76	0.27	4.0	6	8	3	20	sw.	A. D. De Garmo.
Holland	Ottawa	610	5	27.8	+ 4.6	49	26	- 2	3	31	2.47	- 0.41	10.5	14	10	17	17	sw.	Prof. C. L. Herron.	
Howell	Livingston	924	19	23.4	+ 1.3	45	27	- 3	4†	30	1.04	- 0.73	0.30	4.2	8	8	10	13	sw.	Frank Sharp.
Ivan	Kalkaska	22	19.8	+ 1.0	42	11	- 11	6	35	1.42	- 0.93	0.57	14.0	7	2	12	17	nw.	O. L. Giddins.	
Jackson	Jackson	927	14	26.4	+ 2.0	49	27	0	4†	30	1.25	- 0.83	0.40	3.5	9	8	12	11	sw.	City of Jackson.
Jeddo	St. Clair	667	22	24.4	+ 2.3	40	27	- 7	5	28	1.77	- 0.10	0.45	8.5	11	7	7	17	sw.	William Blee.
Kalamazoo	Kalamazoo	955	35	26.8	+ 3.2	52	28	0	3	25†	1.39	- 0.88	0.30	8.0	10	3	5	14	se.	Kalamazoo Asylum.
Lansing (Agricultural College)	Ingham	820	47	25.2	+ 3.2	46	27	- 1	3	27	1.43	- 0.43	0.54	6.3	14	9	7	15	sw.	U. S. Weather Bureau.
Lansing (capital)	... do ...	881	24	25.6	+ 2.8	47	27	0	5	28	1.30	- 0.90	0.54	3.4	15	4	6	21	sw.	State Board of Health.
Lapeer	Lapeer	827	12	25.6	+ 3.8	44	11	- 1	4	32	0.90	- 0.80	0.50	3.0	3	4	24	3	nw.	Michigan Home.
Ludington	Mason	586	13	24.9	+ 0.6	42	11†	1	2	29	0.50	- 1.84	0.22	8.0	3	7	6	13	sw.	Pere Marquette R. R.
Luther	Lake	1,028	1	21.6	42	11	- 7	4†	35	1.26	- 0.46	0.85	15	6	4	21	2	w.	John W. Nicholson.	
Mackinaw	Cheboygan	592	15	19.6	+ 0.7	43	27	- 9	6	35	1.46	- 0.40	0.50	11.0	8	1	10	20	n.	Grand Rapids & Ind. Ry.
Mancelona	Antrim	1,121	15	18.8	- 0.2	39	11	- 22	4	36	2.11	- 0.70	0.40	21.0	11	7	4	20	w.	Do.
Manistee	Manistee	600	14	22.4	- 1.3	44	11	- 1	5	28	0.70	- 2.10	0.30	7.0	3	7	1	23	sw.	Pere Marquette R. R.
Midland	Midland	604	12	22.0	- 1.2	42	22	- 1	18†	33	0.51	- 1.30	0.20	5.0	5	6	3	22	sw.	Gerard A. Whitbeck.
Montague	Muskegon	660	7	26.6	- 0.2	42	24	- 6	18	34	0.51	- 0.57	0.60	1.2	12	18	21	21	s.	George J. Tripp.
Morenci	Leelanau	811	4	28.9	50	11†	1	5	29	2.29	1.10	4.0	11	6	4	21	21	s.	Waterworks.	
Mount Clemens	Macomb	615	11	25.0	- 10	4	29	- 2	17	30	0.30	- 0.20	0.20	3.0	2	17	0	14	sw.	Pere Marquette R. R.
Mount Pleasant	Isabella	826	12	23.4	+ 2.2	42	27	- 9	5†	31	1.72	- 0.21	0.45	5.8	11	3	17	11	s.	Grand Rapids & Indiana Ry.
Muskegon	Muskegon	587	15	25.7	+ 2.4	42	26†	1	6	25	2.95	- 0.40	0.50	11.0	8	1	10	20	n.	John W. Ladd.
Old Mission	Grand Traverse	858	17	22.4	+ 0.2	42	10†	0	4†	28	2.16	- 0.12	0.75	12.7	10	5	21	21	w.	Prof. G. A. Knapp.
Olivet	Eaton	934	21	25.3	+ 2.3	47	27	0	5	28	1.53	- 0.57	0.60	2.9	11	9	0	22	s.	Detroit & Mackinac Ry.
Omer	Arenac	616	12	20.4	- 0.2	40	24	- 6	18	34	0.51	- 0.57	0.60	1.2	12	18	21	21	s.	Do.
Onaway	Presque Isle	826	8	26.6	- 4	40	10	- 4	1	40	1.25	- 0.56	0.61	3.7	9	9	3	18	s.	Pere Marquette R. R.
Ovid	Clinton	700	21	23.9	+ 2.2	45	28	- 1	4†	29	1.25	- 0.56	0.61	3.7	9	9	3	18	s.	State Board of Health.
Owosso	Shiawassee	731	14	25.8	+ 4.2	48	27	0	5†	31	1.72	- 0.21	0.45	5.8	11	3	17	11	s.	Michigan Home.
Petoskey	Emmet	660	21	20.1	+ 1.8	43	26	- 9	3	27	2.19	- 0.29	0.50	19.0	11	24	4	2d	sw.	Pere Marquette R. R.
Plymouth	Wayne	725	24	25.6	+ 1.8	48	28	- 2	5	38†	2.25	+ 0.39	0.20	2.5	3	15	8	12	sw.	Fred W. Shaw.
Pontiac	Oakland	935	11	25.8	+ 0.1	46	27	- 1	4	28	1.58	- 0.31	0.83	1.2	8	9	2	20	sw.	Pere Marquette R. R.
Port Austin	Huron	618	14	23.9	- 40	40	10	- 4	1	40	1.25	- 0.56	0.61	3.7	9	9	3	18	s.	Dr. B. L. Bates.
Port Huron	St. Clair	639	36	25.7	+ 3.9	45	27	1	4	28	1.16	- 0.73	0.45	2.2	13	3	8	20	sw.	Owosso Sugar Co.
Reed City	Osceola	1,033	14	24.4	+ 5.3	41	12	- 5	5	25	1.10	- 1.40	0.50	9.0	4	6	13	12	sw.	Grand Rapids & Indiana Ry.
Roscommon	Roscommon	1,141	7	17.6	38	24	- 16	18	33	0.82	0.25	0.82	11	5	15	11	sw.	Pere Marquette R. R.		
Saginaw	Saginaw	601	9	25.3	45	27	1	5	32	1.50	0.30	0.30	10.0	9	5	7	19	sw.	Pere Marquette R. R.	
Saginaw, W. S.	... do ...	601	16	25.6	+ 2.8	56	8	- 2	5	32	1.16	- 1.42	0.21	4.2	13	4	5	15	sw.	Postmaster.
St. James	Charlevoix	681	5	28.7	+ 2.1	57	25	- 7	5	28	2.50	+ 0.01	0.60	6.0	8	3	2	25	sw.	Robert B. Hudson.
St. Joseph	Berrien	504	24	29.7	+ 2.1	57	25	- 7	5	28	2.50	+ 0.01	0.60	6.0	8	3	2	25	sw.	Rev. James Malone.
Sandusky	Sanilac	790	2	23.0	48	11	- 8	4	33	1.19	0.30	0.50	6.0	6	9	7	15	sw.	Pere Marquette R. R.	
Saranac	Ionia	639	16	25.4	+ 2.7	43	26	- 2	5	28	1.35	- 1.16	0.35	5.5	9	6	4	21	sw.	John W. Wellington.
South Haven	Van Buren	585	15	22.6	- 2.8	40	10†	0	5	20	3.90	- 1.78	0.60	9.0	11	5	8	18	se.	Mrs. M. E. de Diemar.
Stanton	Montcalm	8																		

TABLE 1.—Climatological data for January, 1911. District No. 4—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Number of rainy days, 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of overcast days.	Sky.	Prevailing wind direction.	Observers.									
				Mean.			Departure from the normal.			Lowest.			Highest.																		
				Date.	Date.	Date.	Date.	Date.	Date.	Date.	Date.	Date.	Date.	Date.	Date.																
Ohio—Continued.																															
Ottawa.....	Putnam.....	720	19	31.7	+ 4.5	55	11	2	5	31	2.47	- 0.11	1.00	5.0	8	3	10	18	w.	Prof. J. T. Maidlow.											
Sandusky.....	Erie.....	629	34	30.7	+ 4.4	57	27	0	4	32	2.77	+ 0.67	0.88	3.6	11	7	5	11	sw.	U. S. Weather Bureau.											
Tiffin.....	Seneca.....	775	29	32.0	+ 4.7	55	27	- 4	4	28	3.20	+ 0.59	1.04	5.5	11	6	10	15	s.	Prof. T. H. Sonnedecker.											
Toledo (1).....	Lucas.....	769	40	30.1	+ 4.5	55	27	4	5	32	2.14	+ 0.22	0.95	1.9	14	7	6	18	sw.	U. S. Weather Bureau.											
Toledo (2).....	do.....	606	7	29.9	.....	53	11†	- 5	4	31	1.73	.....	0.68	3.2	10	9	3	20	sw.	J. A. Krance, S. J.									
Upper Sandusky.....	Wyandot.....	854	28	32.5	+ 5.7	58	11	- 5	4	31	4.16	+ 1.56	1.10	14.0	11	6	12	13	sw.	Robert E. Tracht.											
Vickery.....	Sandusky.....	588	18	30.6	+ 3.7	54	11†	8	4	31	2.92	+ 0.65	0.97	2.7	10	3	8	20	s.	John W. Barr.											
Wauseon.....	Fulton.....	780	39	28.7	+ 5.1	53	27	2	5	30	2.10	- 0.28	0.86	6.2	17	3	8	21	sw.	Thomas Mikesell.											
Wellington.....	Lorain.....	856	17	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.00	8.0	10	8	3	19	w.	W. D. Warren.		
Willoughby.....	Lake.....	649	17	.....	.....	.....	.....	.....	.....	.....	3.63	+ 1.18	0.90	6.0	8	2	10	19	w.	C. J. Richardson.				
Erie.....	Erie.....	658	38	30.4	+ 3.9	53	27	7	5	30	4.05	+ 1.02	1.20	11.5	17	3	8	20	s.	U. S. Weather Bureau.											
<i>New York.</i>																															
Adams Center.....	Jefferson.....	540	20	23.0	+ 1.4	48	2	- 13	16	40	3.78	- 0.32	0.40	25.5	17	9	4	18	n.	A. E. Cooley.											
Angelica.....	Allegany.....	1,340	28	26.8	+ 4.5	50	2	- 5	4	32	2.06	+ 0.62	0.34	8.0	13	1	5	25	w.	Chas. P. Arnold.											
Appleton.....	Niagara.....	270	20	28.0	+ 2.5	48	11	5	18	26	1.94	- 0.41	0.66	5.0	11	2	8	21	sw.	H. A. Van Wagoner.											
Auburn.....	Cayuga.....	715	42	25.9	+ 2.0	50	2	- 9	4	30	1.55	- 0.96	0.32	12.0	9	13	11	7	s.	A. H. Underwood.											
Avon.....	Livingston.....	585	16	27.0	+ 4.0	50	2	- 9	19	41	1.67	- 0.17	0.30	7.5	13	1	8	22	w.	W. G. Markham.											
Blue Mountain Lake.....	Hamilton.....	1,750	11	.....	.....	.....	.....	.....	.....	4.79	+ 1.55	1.27	22.5	15	9	5	17	w.	B. F. Merwin.						
Brockport.....	Monroe.....	537	15	26.9	+ 4.3	46	27	4	18	28	2.83	- 0.08	0.50	8.5	19	3	8	20	w.	W. H. Lennon.											
Buffalo.....	Erie.....	767	60	28.2	+ 3.5	48	2	- 3	4	26	2.88	- 0.42	0.79	14.0	18	4	7	20	sw.	U. S. Weather Bureau.											
Canton.....	St. Lawrence.....	448	17	16.1	- 0.2	46	2	- 19	4	50	2.37	- 0.79	0.60	14.0	22	7	7	17	sw.	Do.											
Cape Vincent.....	Jefferson.....	246	6	18.8	.....	42	3	- 10	5	39	1.20	.....	0.49	3.0	6	18	3	10	s.	Verne M. Rice.									
Carvers Falls.....	Washington.....	243	13	20.6	+ 3.0	45	2†	- 9	5†	51	1.70	- 0.34	0.75	3.0	3	14	3	14	s.	W. R. North.											
Chazy.....	Clinton.....	151	11	17.0	+ 1.2	45	3	- 15	5	39	0.55	- 1.17	0.20	5.5	3	14	4	19	w.	Dr. W. N. Thayer.											
Dannemora.....	do.....	1,490	6	16.8	.....	48	2†	- 15	16	44	1.80	.....	0.50	12.0	13	3	8	19	sw.	Joseph S. Wilford.									
Elba.....	Genesee.....	500	12	25.0	+ 1.3	47	2†	- 3	18	33	5.75	+ 2.48	1.00	35.0	17	3	8	19	nw.	Dana H. Wells.											
Fayetteville.....	Onondaga.....	530	10	26.5	+ 2.7	55	2†	- 8	17	32	1.09	- 1.12	0.25	5.0	14	9	3	19	sw.	Gabriels Sanatorium.											
Gabriels.....	Franklin.....	1,729	9	15.6	.....	47	2†	- 21	5	44	2.07	.....	0.24	17.2	17	11	3	17	w.	J. W. Harkness.									
Harkness.....	Clinton.....	622	9	17.9	- 0.3	48	2	- 10	5	39	0.99	- 0.42	0.22	8.5	7	25	0	6	w.	D. H. Westbury.											
Hemlock Lake.....	Livingston.....	900	13	27.6	+ 3.6	52	2	- 4	4	42	1.41	- 0.19	0.60	5.0	3	7	11	13	s.	W. S. Barger.											
Hunt.....	do.....	1,321	12	30.2	+ 6.0	54	2†	- 5	18	30	1.10	- 1.55	0.70	3.0	4	18	9	20	sw.	U. S. Weather Bureau.											
Ithaca.....	Tompkins.....	928	33	28.4	+ 4.3	52	27	3	4	33	1.96	- 0.20	0.46	6.6	16	4	8	19	s.	E. R. Wells.											
Keene Valley.....	Essex.....	1,000	13	20.8	+ 2.5	51	3†	- 13	5	42	1.74	- 1.33	0.26	10.8	17	11	5	15	w.	Lucius A. Goodey.											
King Ferry.....	Cayuga.....	.....	11	.....	.....	.....	.....	.....	.....	.....	1.69	- 0.66	0.36	4.5	11	4	6	21	se.	Charles Forsell.			
Lake George.....	Warren.....	350	14	21.0	+ 2.5	45	2	- 8	17	30	1.74	- 1.34	0.48	7.5	15	7	9	15	sw.	H. Van Hoevenberg.											
Lake Placid Club.....	Essex.....	1,864	3	13.9	.....	46	2	- 20	5†	43	5.50	.....	0.65	29.8	15	11	8	12	nw.	F. W. Ball.									
Le Roy.....	Genesee.....	920	21	27.1	+ 6.6	48	27	2	16†	33	2.45	- 1.03	0.43	12.1	20	2	5	24	sw.	J. E. Wakeman.											
Lockport.....	Niagara.....	650	24	27.3	+ 3.0	45	27	3	4	25	2.46	- 0.04	0.68	12.7	16	5	2	22	w.	Charles J. Rice.											
Lowville.....	Lewis.....	900	44	18.4	- 0.1	48	2	- 17	4	41	1.45	- 1.34	0.40	4.0	7	10	6	15	s.	C. E. McBride.											
Moiré.....	Franklin.....	200	11	15.2	- 0.1	48	2	- 18	5	38	2.52	- 0.36	0.50	23.5	13	5	12	14	sw.	L. W. Brown.											
Nehasane.....	Herkimer.....	1,750	3	15.2	.....	45	2	- 24	17†	44	3.92	.....	0.60	32.0	25	11	4	16	sw.	Edward Conron.									
North Lake.....	do.....	1,822	10	.....	.....	.....	.....	.....	.....	.....	2.18	- 0.66	0.38	7.9	16	3	4	21	se.	State Hospital.				
Ogdensburg.....	St. Lawrence.....	175	27	16.4	+ 0.7	43	2†	- 19	4	34	2.65	+ 0.50	0.50	22.7	14	9	15	7	sw.	Dr. Stuart W. Nelson.											
Old Forge.....	Herkimer.....	1,733	3	18.2	.....	45	2	- 22	17	42	4.12	.....	0.77	24.4	21	7	5	19	s.	U. S. Weather Bureau.									
Oswego.....	Oswego.....	335	41	25.8	+ 1.9	48	2	- 2	1	45	3.5	- 1.48	0.50	5.6	12	2	6	23	s.	Wm. Winke.											
Otto.....	Cattaraugus.....	1,410	7	27.4	.....	51	29	- 2	17	40†	2.00	.....	0.86	2.4	9	2	10	sw.	E. B. Bartlett.										
Palermo.....	do.....	490	52	.....	.....	.....	.....	.....	.....	1.16	- 2.10	0.40	1.2	14	10	6	15	se.	W. H. Jeffers.						
Perry City.....	Schuyler.....	1,038	31	25.0	+ 3.2	51	27	- 8	5	31	2.13	- 0.66	0.38	7.9	16	3	4	24	sw.	E. D. Babcock.											
Philadelphia.....	Jefferson.....	485	5	19.4	.....	46	3†	- 16	4	36	3.12	.....	0.52	15.0	21	6	7	18	s.	A. E. Sutherland.									
Potsdam.....	St. Lawrence.....	300	35	16.8	- 0.8	48	3	- 19	5	49	1.71	- 0.23	0.36	11	15	1	15	w.	R. J. Dunning.												
Raquette Lake.....	Hamilton.....	3	17.4	.....	44	2†	- 17	5†	36	2.88	0.67	16.8	14	10	3	18	sw.	U. S. Weather Bureau.												
Rochester.....	Monroe.....	523	82	27.8	+ 3.8	51	2	6	16	29	1.72	- 1.41	0.55	9.5	17	3	6	22	w.	John H. Coryell.											
Romulus.....	Seneca.....	719	19	28.0	+ 4.1	50	2†	4	5	27	0.21	- 0.21	0.65	8.0	9	5	8	18	s.	C. H. Latting.											
Shortsville.....	Ontario.....	740	12	27.4	+ 2.7	50	2	2	4†	31	0.52	- 1.49	0.20	2.0	3	6	6	12	sw.	Edward Conron.											
Skaneateles.....	Onondaga.....	16	.....	.....	.....	.....	.....	.....	.....	2.55	- 0.11	0.70	.....	19	.....	.....	.....	.....	sw.	U. S. Weather Bureau.		
Syracuse.....	do.....	597	9	27.1	+ 4.1	52	2	- 2	16	38	2.11	- 0.03	0.60	10.2	19	7	4	20	nw.	Eva M. De Lano.											
Ticonderoga.....	Essex.....	344	13	21.9	+ 3.0	38	8†	- 15	16	42	0.50	- 2.25	0.17	4.5	7	15	5	11	w.	Aaron W. Maddox.											
Tupper Lake.....	Franklin.....	1,522	11	16.8	+ 1.4	46	2	- 24																							

TABLE 2.—*Daily precipitation for January, 1911. District No. 4, Lake Region.*

TABLE 2.—*Daily precipitation for January, 1911. District No. 4—Continued.*

TABLE 2.—*Daily precipitation for January, 1911. District No. 4—Continued.*

TABLE 3.—Maximum and minimum temperatures for January, 1911. District No. 4, Lake Region.

Date.	Duluth, Minn.		Wisconsin.						Chicago, Ill.	Fort Wayne, Ind.	Michigan.																		
			Florence.		Green Bay.		Milwaukee.				Escanaba.		Ewen.		Houghton.		Marquette.		Sault Ste. Marie.		Alpena.		Battle Creek.		Cadillac.				
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.			
1...	4	—4	23	17	30	21	38	31	42	35	41	30	30	24	25	12	32	13	30	22	34	25	35	27	36	26	33	25	
2...	—3	—20	17	3	25	3	39	4	43	9	40	14	28	6	13	3	13	2	22	6	25	—11	40	5	39	11	36	15	
3...	—8	—30	3	—18	7	—17	9	—2	13	3	18	12	11	—5	5	—16	8	—14	9	—3	—2	—17	8	—5	15	7	15	—2	
4...	3	—17	7	—21	11	—18	14	—3	18	3	16	9	9	—11	7	—16	10	—14	8	—6	16	—17	17	—5	14	1	10	—3	
5...	0	—23	0	—19	0	—14	22	—5	28	0	20	1	7	—12	8	—14	4	—9	7	—4	10	—2	15	3	12	2	12	—2	
6...	8	—4	13	—28	10	—6	22	7	29	18	33	20	18	—12	5	—18	16	—13	17	—2	7	—11	20	2	14	9	—	—	
7...	16	4	18	6	19	0	38	6	42	18	43	18	19	8	11	—12	16	8	21	11	21	7	27	12	35	11	—	—	
8...	19	6	23	0	34	14	37	15	40	16	42	31	30	14	22	—14	25	10	28	14	26	6	34	22	38	15	—	—	
9...	27	—11	15	1	26	0	25	4	28	10	34	18	27	9	23	2	28	10	25	11	18	1	23	13	26	15	—	—	
10...	35	—9	36	11	38	26	43	25	49	27	48	21	35	23	37	22	38	26	38	23	37	18	38	22	28	17	—	—	
11...	4	—15	34	4	34	12	44	26	50	35	55	43	32	11	35	0	34	5	36	—1	38	15	39	17	—	—	—		
12...	17	6	25	7	26	11	35	24	39	33	54	33	28	7	21	—3	28	6	28	13	13	—6	25	13	44	32	—	—	
13...	6	9	26	7	27	16	34	28	39	34	38	34	27	13	13	0	17	6	25	12	26	30	21	34	28	—	—		
14...	—2	10	16	11	18	7	32	9	38	38	34	23	12	—1	18	8	22	10	19	12	33	21	35	25	—	—			
15...	2	17	12	0	12	0	15	6	22	14	36	25	12	—1	6	9	2	10	2	18	3	21	7	32	18	—	—		
16...	5	—17	10	—6	6	—6	12	2	25	11	30	18	15	—8	8	—6	9	3	14	—1	14	1	18	6	20	9	—	—	
17...	17	—3	15	—3	17	3	24	11	26	24	25	19	20	5	18	—13	19	—2	22	6	17	—2	23	8	19	11	—	—	
18...	23	6	28	—6	21	2	25	17	27	17	34	12	20	2	25	—13	31	—2	29	6	30	—5	27	4	30	7	—	—	
19...	20	—3	24	11	26	20	32	23	33	23	30	19	19	14	23	10	28	5	26	9	25	7	29	12	28	18	—	—	
20...	24	8	30	12	35	24	38	27	41	32	39	29	33	16	32	12	32	8	32	12	32	5	35	14	35	25	—	—	
21...	7	—13	30	1	29	—2	36	7	39	15	41	25	18	0	19	—11	13	6	16	5	26	12	36	12	33	17	—	—	
22...	12	5	18	—11	18	—8	24	4	26	11	31	18	14	—5	12	—15	17	7	17	4	21	4	25	7	25	8	—	—	
23...	30	—7	32	8	30	11	38	18	40	21	39	16	25	7	30	—1	34	6	31	8	25	1	32	16	35	15	30	12	
24...	35	16	41	20	36	24	42	28	44	29	48	18	42	21	34	25	40	35	17	41	26	41	20	37	25	35	25	—	—
25...	33	26	33	15	37	30	39	34	43	39	44	28	34	19	35	19	34	28	36	25	25	21	35	26	44	33	37	32	
Mns.	15.7	—5.9	23.1	3.1	24.6	8.4	31.8	15.7	36.6	21.8	38.7	23.5	24.4	8.2	22.1	—0.4	22.9	6.5	24.5	9.8	23.0	5.2	28.6	13.9	32.6	17.9	—	—	

Date.	Michigan—Continued.						Ohio.						New York.						Vermont.									
	Detroit.		Muskegon.		Saginaw, W. S.		Cleveland.		Lima.		Sandusky.		Toledo.		Erie, Pa.		Buffalo.		Canton.		Rochester.		Syracuse.		Burlington.		Northfield.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.		
1...	33	27	40	35	38	27	45	29	38	18	47	33	42	32	45	29	44	29	39	23	43	25	46	23	38	19	33	2
2...	41	14	36	18	40	17	51	19	45	20	50	18	47	15	53	23	48	25	46	34	51	28	52	35	47	37	55	33
3...	19	5	20	6	17	3	21	14	20	13	18	8	19	9	24	15	25	12	34	3	28	14	35	15	46	15	51	20
4...	17	5	18	6	16	2	17	6	17	3	16	0	17	8	19	14	18	3	3	—19	15	9	15	2	15	—8	20	—10
5...	16	2	18	5	14	—1	20	4	20	1	24	4	23	4	16	7	17	6	17	8	17	8	19	19	33	18	—11	—11
6...	21	14	14	1	20	10	33	20	33	19	33	22	32	21	33	14	30	11	6	2	29	11	32	8	14	5	16	1
7...	35	16	37	12	36	12	40	22	40	20	41	24	41	22	40	22	37	22	36	2	35	24	34	25	32	37	7	
8...	39	20	36	20	56	24	44	23	44	34	44	22	44	23	44	27	44	28	42	30	43	32	43	33	41	23	37	4
9...	29	20	25	20	30	19	26	22	35	19	28	22	36	22	27	21	28	17	36	9	32	16	36	20	36	19	34	19
10...	42	21	41	20	40	18	48	20	45	26	49	22	47	22	46	18	43	17	34	2	39	15	38	16	30	6	33	10
11...	45	32	41	28	42	24	53	32	56	43	54	33	53	32	50	33	46	34	43	26	47	34	47	37	40	30	49	13
12...	33	28	32	22	31	23	43	32	57	33	39	31	36	29	33	30	36	25	26	4	37	18	36	4	36	4	36	4
13...	37	31	32	30	33	29	48	32	43	37	45	32	46	31	37	33	30	17	3	37	24	41	21	32	6	30	4	
14...	37	29	32	29	34	28	46	32	48	38	43	33	41	33	44	33	38	30	21	12	34	27	36	26	33	22	33	22
15...	29	15	26	17	30	16	32	21	48	17	33	19	35	16	33	17	19	1	34	17	34	13	22	1	34	1	34	1
16...	18	11	18	16	19	7	21	14	38	15	19	15	21	13	13	16	17	7	0	—12	17	6	15	—				